THE DEVELOPMENT AND IMPLEMENTATION OF A READING AND STUDY SKILLS PROGRAM IN A JUNIOR HIGH SCHOOL

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THE DEVELOPMENT AND IMPLEMENTATION OF A READING AND STUDY SKILLS PROGRAM IN A JUNIOR HIGH SCHOOL

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by
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ABSTRACT

The internship was designed to develop and implement in a junior high school an inservice program in the teaching of reading and study skills in mathematics, general science, English literature and social studies. The objectives of this program were to help teachers to become aware of these reading and study skills, to help them to become familiar with techniques to teach these skills and to help them, if they so desired, to develop a reading and study skills program which could be implemented the next school year.

The program involved a series of formal and informal teacher-intern conferences designed to strengthen the teachers' awareness of the reading and study skills and to show them techniques to teach the skills. The intern demonstrated some teaching techniques in the classroom. He included lessons on vocabulary development, finding the main idea, developing cause and effect relationships, problem solving and developing literal, inferential and creative comprehension. The intern also developed and distributed resource materials which contained activities that the teachers could use with their classes. Finally, he gave the teachers lists of reading materials for their own further use.

The teachers' evaluation of the inservice education program revealed that, generally, they found the program to be a valuable experience. They found that they had a greater awareness of the importance of teaching the reading and study skills, that they were making a conscious effort to teach these skills and that the techniques and activities which the intern provided helped them to teach the skills. However, they also said that such a program would be of more benefit if it were implemented at the beginning of the school year.

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Chapter 1

INTRODUCTION

It is generally agreed that in Newfoundland many high school students do not possess adequate reading and study skills. The intern felt that this lack of student competence was, in part, due to inadequate preparation of teachers to teach these skills. He decided, therefore, to undertake an internship in a junior high school in which the teachers were willing to undergo a period of inservice education in teaching reading and study skills in selected content areas.

Purpose

The purpose of the internship was to develop an inservice training program designed to help teachers of grades seven to nine become familiar with various methods and activities in teaching the reading and study skills appropriate to mathematics, general science, English literature and social studies.

Need for the Internship

One of the major reasons for the high dropout rate of students in secondary schools in Newfoundland is their inability to read effectively certain or all of the materials that they are obliged to study (Kennedy 1965). One cause of this inability could be that students generally are not being taught the reading and study skills necessary to cope with the specific content areas. This lack of instruction has not been a matter of neglect on the part of secondary school teachers. Until recently there has been little or no concern with the teaching of reading in the majority of secondary schools. Many teachers, therefore, are inadequately prepared to teach those skills. In addition, those teachers who recognize the need for teaching reading skills in high school generally regard it as the responsibility of the English teacher. Furthermore, many teachers feel that their responsibility is to teach content and they assume that when students enter high school, they have previously acquired sufficient knowledge of the necessary reading skills.

If students are going to be able to cope with the content areas, they have to be taught how to read effectively. If teachers are going to teach reading and study skills,

they must be made aware of the skills and the methods to teach them.

Objectives

The intern was responsible for an inservice training program of eight weeks duration involving teachers in a junior high school. Since the teachers were already aware of the need for teaching reading and study skills, the program was concerned with developing methods and activities for teaching those skills associated with specific content areas.

The purpose of the internship was essentially to achieve the following objectives:

1. To work with the teachers in identifying the reading and study skills associated with each of the content areas.

2. To work with the teachers in developing techniques for teaching their students those reading and study skills.

3. To work with the staff in developing a program for the following school year, based on the suggestions compiled during the internship.

Organization of Report

This chapter has included a discussion of the purpose of the program, the need for this type of program and the objectives the intern wished to achieve. Chapter two will present a review of related research. In chapter three, the procedures the intern used will be outlined. Chapter four will be concerned with the teachers' and intern's evaluation of the program. Chapter five will contain a summary of the program and the intern's conclusions and recommendations.

Chapter 2

REVIEW OF RELATED LITERATURE

Available research indicates that there are reading skills unique to specific content areas and hence implies the need for teaching students those skills.

McCallister (1930) analyzed the reading activities involved in studying American history, mathematics and general science, using the students in grades seven and eight of the Laboratory Schools of the University of Chicago. Procedures included visiting classrooms to become acquainted with the methods of teaching and the materials used, careful analysis of the reading activities required to read the materials, analysis of the pupils' written reports and his personal observations of study activities to determine their difficulties in performing the reading activities.

Five units of instruction with school visits continued for approximately five months. The work plan consisted of (1) general directions with regard to study activities, (2) directions for exercises designed to teach the essential points in the unit and (3) a list of reference

materials. McCallister presented the pupils with a problem and required them to write a report showing the solution. An observer questioned each student and took notes during his attempt to find the solution. Analysis of the notes disclosed fifty reading difficulties classified into six categories as follows: (1) methods of attack, (2) recognizing relations, (3) knowledge of subject matter, (4) deficiencies in vocabulary, (5) inaccuracies and (6) lack of clearness in directions given to pupils.

On the basis of this analysis, the investigator concluded that the successful study of a subject depends on the teaching techniques emphasized and on the reading material assigned. Generally, the skills needing development were methods of attack, recognizing relations, performing the types of thinking required by various subjects, overcoming difficulties with vocabulary and accurate interpretation.

Robinson and Hall (1941) reinforced and narrowed somewhat McCallister's general conclusions in a study where they attempted to ascertain if there were any higher level reading abilities involved in reading art, geology, fiction and history (history consisted of Russian and Canadian). The study involved 205 students in eight sections of a required course in educational psychology at Ohio State

University. The students were made up mostly of freshmen and sophmores; some juniors were included as well as some seniors and one graduate student. The investigators administered five reading rate and comprehension accuracy tests on passages from the four areas, varying in length and time allowed for reading. They found that on rate scores, correlations varied from .54 between fiction and geology to .98 between Russian and Canadian history. On comprehension accuracy scores, correlations varied from .16 between fiction and geology to .96 between Russian and Canadian history.

On the basis of such analysis, Robinson and Hall concluded that an individual will demonstrate several different reading abilities in reading different subject matters. Further, the correlations obtained for both Russian and Canadian history on rate and comprehension accuracy indicated a basic reading skill for history.

Swenson (1942) used 217 eighth grade students to study the relationships among various types of reading scores and scores on tests based on science material. He compared scores on rate, vocabulary and comprehension from the Traxler Silent Reading Test, Form One, for grades seven through ten with scores on rate, vocabulary and comprehension from a science test developed by the investigator and based on the

science materials the students were using. He matched the seventy-five students with highest scores and the seventy-five students with lowest scores on the basis of mental age and chronological age. All subsequent analyses were made on the matched pairs. The investigators made a t test comparison between the matched groups on the components measured: science reading total (16.35), science reading rate (5.86), science vocabulary (8.74), science comprehension (9.29); Traxler reading total (10.61), Traxler reading rate (5.62), Traxler vocabulary (6.76), Traxler comprehension (6.26).

Swenson concluded that relationships exist between different reading abilities and various content areas and also that relationships exist between varying levels of subject matter and types of reading skills demanded. Furthermore, Swenson concluded that teachers should take those differences into account when teaching their specific content areas.

Shore's study (1943) carried Swenson's observations a step further. He studied the skills related to the ability to read history and science by administering tests of comprehension for both subjects to 308 ninth graders. He compared good and poor readers of the subjects for differences in mean ability in each of the measured skills. Shore

first rendered the students equivalent in mental age and ability to read literature, then found the significant differences between the various means. He found the major differences to be in history vocabulary, organization of ideas, total meaning, paragraph comprehension, using references, using the dictionary, comprehension of maps and study skills. All other measured skills were found to be in the upper levels of significance whereas those mentioned were found to be in the lower levels of significance or of no significance at all as in the case of total meaning, paragraph comprehension, using references, using the dictionary and study skills as related to science.

Shore's conclusions stemming from this analysis included: (1) by ninth grade, students' reading proficiency is to a large extent dependent upon the content matter being read, (2) various reading abilities are associated with the type of material read and (3) there are skills specific to reading history as well as skills specific to reading science. The teaching of such skills, he further concluded, is the responsibility of the teachers where the skills are overlapping from one subject to another or is the individual responsibility of the content area teacher.

In a further study, Artley (1944) analyzed certain

relationships between general reading comprehension and reading comprehension in the social studies. The investigator administered six tests, among them a general reading comprehension test, a non-verbal abilities test and several social studies achievement and comprehension tests. The tests required a total of five hours to administer, with no more than three weeks between tests. The subjects were 242 eleventh grade students. The factors measured included ability to obtain facts, ability to organize, ability to interpret, ability to apply generalizations, ability to perceive logical relationships, ability to evaluate arguments, command of general reading vocabulary and command of social studies vocabulary. The correlations between those factors of comprehension and the criterion measure of reading comprehension in the social studies ranged from .58 for ability to evaluate arguments to .83 for ability to interpret.

Artley concluded that there are different factors at work in reading comprehension in social studies; it is as important to know history's specialized vocabulary as it is to know the facts of history; the ability to read general material and the ability to read social studies material seem to be associated.

Maney and Sochor (1958) undertook two complementary

studies using 513 fifth graders in the last month of the school year from urban Philadelphia, Pennsylvania. They studied the relationships among general reading ability and literal and critical reading in science (Maney) and social studies (Sochor). They used the Gates Reading Survey as a test of general reading comprehension, the Pinter General Ability Test as a measure of verbal intelligence and their own developed measures of literal and critical reading. Literal reading was defined as the ability to interpret at a low level, using the information directly stated (Maney, 1958). Critical reading was defined as the ability to interpret at a higher level than literal, such as the ability to sense semantic variation, to recognize central theme, to draw inferences and to generalize (Maney, 1958).

The investigators found the Pearson product moment correlations to be .75 and .76, respectively, between general reading ability and literal reading in science and social studies but reduced to .35 and .41 with intelligence held constant. Between general reading and critical reading, the correlations were .60 in science and .64 in social studies but reduced to .11 and .17 with intelligence partialled out. The correlations between literal reading and critical reading were .67 in science and .61 in social studies but reduced to

.34 and .23 when intelligence was held constant.

These findings led them to conclude that there is a relationship between general reading and critical reading in science and social studies; there is a high relationship between general reading ability and literal reading in science and social studies; there is a substantial relationship between literal and critical reading in both science and social studies. The relationship between reading in science and social studies and general reading, however, was not perfect and therefore these abilities were not considered as being identical.

A later study by Shores and Saupe (1953) supports the final conclusions of Maney and Sochor. The study examined the relationship between reading for problem-solving in science and mental age language, mental age non-language, reading age, arithmetic age and chronological age. They administered the New California Short-form Test of Mental Maturity and the Progressive Achievement Tests to eight thousand Illinois City fourth, fifth and sixth graders to obtain correlations among the five ages and achievement. The investigators also developed and administered a problem-solving test in science to 214 fourth, fifth and sixth graders. Results of 182 of the 214 cases were tabulated and

correlations found between results of both sampling populations.

The investigators' most relevant correlations included a .73 correlation between science reading and reading age, a .69 correlation between science reading and mental age language and a .57 correlation between mental age non-language and science reading. The lowest correlation was between science reading and chronological age (.09) and the highest correlation existed between arithmetic age and reading age (.91).

Analysis of the results led the investigators to conclude that although the reading of fourth, fifth and sixth graders in science has a great deal in common with general reading ability, mental ability and general achievement, there is still an element in science reading for which those factors cannot account.

Some of the preceding studies imply, directly or indirectly, teacher responsibility in teaching reading and study skills in the content areas. Shores, for example, mentions that teachers are responsible either individually or jointly for teaching reading skills associated with history and science. McCallister discusses techniques of teaching and Swenson concludes that teachers need to take into account

various differences relating to skills and content. Other studies also undertaken deal with teachers' attitudes toward competencies in teaching reading skills in content areas.

Patterson (1958) undertook an investigation to determine the role played by high school teachers in the improvement of reading instruction. He prepared twelve general statements relating to the participation of the classroom teacher in supplementing the formal instructional program of reading in high school and asked thirty-one teachers to react to each statement by agreeing, agreeing with reservations, disagreeing with reservations or disagreeing. Specific suggestions were also made to teachers regarding practices they were following in the classroom.

Twenty-nine teachers agreed they ought to know how to organize a reading program. Twelve agreed that they should be giving students help in developing good reading skills in the content areas. Five agreed that seminars should be held to aid teachers in teaching the reading skills. On the other hand, while thirty teachers were helping students become word conscious, only two were sectioning students in class according to reading abilities. Twenty-four gave supplemental reading assignments whereas eight were supplying the reluctant reader with the right book, and

fourteen were teaching students how to skim material. Further analysis of the responses, however, indicated that generally teachers wanted to be more effective in the area of applying reading techniques, but they felt incompetent because of the specialized training necessary.

A study by McGinnis (1961) both substantiates and elaborates on Patterson's findings. She investigated the training received by secondary school teachers to prepare them for instruction in reading in secondary school. The investigator mailed questionnaires to one thousand teachers from eighty-three counties in the State of Michigan. Five hundred seventy questionnaires were completed and returned. In addition, she administered sixteen questions regarding their instruction in reading to 1,029 college freshmen enrolled at Western Michigan University. The responses of both teachers and freshmen were tabulated and compared by means of t scores.

Forty-five of the respondent teachers emphasized the need for developmental reading in high school. Twenty-eight said that the responsibility for such a program should not be assumed by the high school teacher. Twelve said they had not received instruction in reading in their professional training except at the graduate level. Over half (61 percent)

of the student respondents indicated that teachers had not shown them how to improve their reading. Ninety percent said they were all required to read from the same text.

The preceding examples were typical of the results obtained by the investigator and she concluded that there was a definite need for improved reading instruction at the secondary level but that teachers were not providing, nor were they equipped to provide, this instruction.

A later survey taken by Braam and Roehm (1964) attempted to determine (a) if teachers were familiar with the skills necessary for successful reading in the subject areas, (b) if they were aware of reading strengths and weaknesses of their students, (c) if familiarity with skills and awareness of students' abilities existed among some teachers but not among others, and (d) if teachers exposed to formal courses or inservice guidance were more aware of the necessary reading skills and students' strengths and weaknesses than those teachers who were not given such help.

The investigators sent questionnaires containing six questions to sixteen schools with a request that a representative teacher from each of nine subject areas be asked to complete and return a copy. Responses from fifteen schools were received and analyzed. The teachers listed a

total of sixty-three skills in which their students were least competent. The skills were ranked in order of ten categories according to the frequency with which they were mentioned. The skills which teachers considered most important for students to have but in which their students were least competent were comprehension, critical reading, vocabulary and reading rate.

The data obtained by Braam and Rohem indicated that 28 percent of the responding science teachers had received training in the teaching of reading, 68 percent of the schools had a reading program and 78 percent of the schools had a reading specialist or reading teacher.

The investigators concluded that the knowledge of reading skills of the content area teacher was not parallel to that of reading experts. Indeed, there existed considerable discrepancy. The familiarity or unfamiliarity of teachers with reading skills was almost uniform according to the various fields. They further concluded that teachers must have the skills themselves in order to teach their students the skills. The investigators finally suggested that teachers should first be made aware of the need to teach the reading skills before they are given inservice training or formal training in the area, otherwise such training is

of little value.

A later study by Olson and Rosen (1967) not only reinforces Braam and Rohem but points toward the state of confusion that exists in teaching reading in the content areas. The investigators collected from 41 schools the responses of 585 junior and senior high school teachers to a checklist involving their practices relating to reading. The investigators also asked the forty-one principals of those schools the degree to which they thought the practices were employed by their teachers. Chi-square analysis on the responses to the twenty item checklist to determine the significance of difference in choices revealed that responses differed significantly at the .01 level between principals and teachers.

The investigators observed that there was a discrepancy between the practices of teachers and the information they believed they had available to them. The use made of the information indicated confusion or lack of application. As a result, the investigators concluded that there was a need for a more systematic approach to the use of instructional materials.

Smith and Otto (1969) also surveyed teacher attitudes

toward teaching reading in the content areas. They experimented with a personal improvement course in reading for secondary teachers rather than an inservice training program. The investigators collected and analyzed data on nineteen junior and senior high school teachers to determine if teachers experienced any change in their attitude toward teaching the reading skills in their content areas. Three reading specialists and one university professor worked in teams of two. An inventory constructed to measure the direction and intensity of the teachers' attitudes toward teaching reading in the content areas revealed pre- and post-instruction reliability coefficients .87 and .85 respectively.

Thirteen subjects indicated that they felt more able to improve their students' reading after doing the course in reading. Eleven said they were more willing to make reading instruction a part of their regular programs.

The conclusions were that the reading improvement course had positive value in that the majority of those who underwent the course both improved their reading skills and indicated that reading skills should be taught in the content areas.

Otto (1969) independently administered a fourteen

item attitude inventory to thirty-eight junior high and forty-nine senior high teachers from schools in Wisconsin City. The purpose was to measure the attitudes of these teachers toward teaching reading in the content areas.

The responses showed that 60 percent of senior high teachers agreed that students should know what there is to know about reading before they leave elementary school, whereas of the junior high school teachers, only 39 percent agreed while 57 percent disagreed with the statement. Forty-eight percent of senior high teachers agreed that every teacher is a teacher of reading, whereas 71 percent of junior high teachers agreed. Reliability coefficients varied from .836 for junior high school teachers' responses to .915 for senior high school teachers' responses.

Otto summed up his conclusions by saying that many teachers recognized the need for reading instruction in high school and that they were willing to accept the responsibility for this instruction. He further concluded that teachers felt the need for more training in teaching the special skills if they were to accept this responsibility.

Simmons (1963) developed a theoretically sound high school reading program. From the program, the

investigator developed a forty item questionnaire on reading principles and practices at the secondary level. He sent the questionnaire to 152 teachers from the areas of Minnesota, North Dakota, South Dakota, Iowa and Wisconsin and received one hundred twenty-seven completed questionnaires for analysis.

Twenty-one teachers felt that it was the English teacher's responsibility to organize the reading program. Ten teachers felt it was the responsibility of the administration. Seven teachers felt it was the domain of the reading specialist. Information showing professional training for teaching reading indicated that English teachers and administrators generally were the least qualified to organize a program and teach reading. Thirty-one of the teachers had no formal training in reading.

The investigator concluded that even though the English teacher was the poorest prepared, the other teachers thought it was his responsibility to initiate and organize a reading program at the secondary level.

The preceding research suggested several generalizations concerning the teaching of reading in the content areas. It pointed toward the idea that there are reading and study skills unique to content areas. It showed also

that students are not being taught the reading and study skills and that teachers in general are not prepared to teach those skills. Finally, the research implied that the responsibility for teaching the reading and study skills lies with the teacher of the content areas.

Chapter 3

METHODOLOGY

After receiving permission from a local school board reading supervisor, the intern provided inservice education during the last eight weeks of the school year for ten teachers in the content areas of social studies, mathematics, English literature and general science at a junior high school in St. John's. The school, a relatively old, traditional-type structure, had a total enrollment of 290 female students in grades eight and nine. There were fourteen regular classrooms, and classes were held in the library on a part-time basis. The professional staff of thirteen, including a principal and a vice-principal, held provincial teaching certificates ranging from grade one to grade seven which is the highest certificate awarded in Newfoundland. The school was well kept and equipped with a fairly wide range of printed and audio-visual materials as teacher-learner aids.

Instruments

The instruments the intern used to achieve the objectives of the program included lists of reading and study skills for each of the content areas, an inventory to measure

teacher attitude toward the importance of various skills, informal group reading inventories for each of the content areas, demonstration lessons designed to give teachers suggestions for teaching various reading and study skills, and information and activity sheets designed to help teachers teach and reinforce the development of content area reading skills.

Procedures

Approximately two weeks prior to the commencement of the internship, the intern met with the ten teachers and the principal at the school. During this conference, the intern outlined the internship program, explained the internship objectives and clarified the points the teachers raised concerning the proposed program.

Some teachers were concerned as to whether or not this program would constitute a term of supervision by the intern and a report to the principal regarding how, in the opinion of the intern, they were teaching their content area subjects. Other teachers were concerned that the intern intended to mention in his report specific names of teachers and the teaching practices they employed while teaching their content area subjects. Still others wondered if the

intern were a student teacher and as such would be observing daily lessons and teaching others in preparation for his own career as a teacher.

The major concern appeared to be the amount of time the intern would expect teachers to spend in meetings. Because of the nearness of year-end examinations, these teachers were extremely busy and were unable to attend prolonged after-school meetings. On all these points, their concerns were allayed and the inservice training program proceeded as scheduled.

Attitude Inventory

Approximately two hours was spent in emphasizing the importance of teaching the reading and study skills in the various content areas. The intern then gave the teachers a checklist of reading and study skills and asked them to indicate, in their view, the degree of importance of each skill. The results of the checklist (see Table 1) revealed that the teachers were aware of the importance of teaching the reading and study skills in their respective content areas.

As Table 1 shows, all ten teachers thought all but six skills were either very important or important as they applied to their content area subjects. Three thought that

Table 1

Teacher Attitude to Relevance
of Skills to Subject Areas

Skills	Relevance to Content Area Subjects			
	Very Important	Important	Of little Importance	Of no Importance
Study Skills				
Using textbooks efficiently	3	7		
Using the library efficiently	6	4		
Taking notes	1	9		
Scheduling time efficiently	4	6		
Preparing for examinations	2	5	3	
Preparing for discussions and reports	2	8		
Using reference materials efficiently	5	5		
General Reading Skills				
Adjusting rate of reading to suit purpose and content	5	5		
Reading orally	1	6	3	
Reading selectively	5	5		
Skimming with a purpose	6	4		
Word Meaning Skills				
Use of dictionary	5	5		
Use of glossary	4	6		
Use of new terms in speaking and writing	1	9		
Understanding of prefixes, suffixes and roots	1	9		
Understanding of figurative language		7	3	
Understanding connotations of words	2	7	1	

Table 1 (Continued)

Skills	Relevance to Content Area Subjects			
	Very Important	Important	Of little Importance	Of no Importance
General Reading Skills (Continued)				
Understanding of technical vocabulary related only to this subject	1	8	1	
Comprehension Skills				
Recognition and understanding of main ideas	9	1		
Recognition of relevant details	7	3		
Recognition of relationships among main ideas	8	2		
Organization of ideas in a sequence	6	4		
Following directions	6	4		
Reading maps, tables and graphs	3	7		
Distinguishing between fact and opinion	5	5		
Judging and criticizing material	5	5		
Seeking additional evidence	3	7		
Drawing inferences	4	6		
Listening attentively and critically	7	3		

N = 10

preparing for examinations, reading orally and understanding figurative language were skills of little importance. In the case of reading orally and understanding figurative language, the results are understandable since some of the teachers were involved with mathematics and science, and these content areas do not particularly lend themselves to those skills. In the case of preparing for examinations, some teachers related that part of their philosophy of teaching was to teach what they considered important rather than just the content of examinations. Only one teacher thought that understanding of personal and general connotations of words, and understanding of technical vocabulary related only to his subject were of little importance. Again these results are understandable since technical vocabulary would not necessarily relate to English literature at the junior high level and connotations of words would not necessarily apply to mathematics and science. For example, the word square in English could mean a conservative person, but in mathematics the word square could mean a figure bounded by four equal lines and containing four right angles.

Skills Development

The intern then proceeded to demonstrate some of the

skills that students need in order to read effectively in their content areas. For this purpose, he used a short story "The Cask of Amontillado," selected from Understanding Literature (1970), and problem number ten, page 375, in Exploring Elementary Algebra (1967).

From "The Cask of Amontillado," the intern chose the words definitively, precluded, accosted and orbs and pointed out that students needed to understand these words in order to fully appreciate and comprehend the selection. He then demonstrated the contextual approach to teaching this vocabulary, using the following paragraph:

> The thousand injuries of Fortunato I had borne as I best could; but when he ventured upon insult, I vowed revenge. You, who so well know the nature of my soul, will not suppose, however, that I gave utterance to a threat. At length I would be avenged; this was a point definitively settled - but the very definitiveness with which it was resolved precluded the idea of risk. I must not only punish, but punish with impunity. A wrong is unredressed when retribution overtakes its redresser. It is equally unredressed when the avenger fails to make himself felt as such to him who had done the wrong (p. 4).

The intern suggested that the teachers imagine themselves to be grade nine students while he taught the preceding words in context. He pointed out that the character used the words "vowed revenge" in line three and "I would be

avenged" in line six, which give the impression that it was a foregone conclusion that revenge would be had. Then in line seven it was re-emphasized with the phrase "a point definitively settled." This tells the reader that revenge was an absolute certainty and hence is a strong hint as to the meaning of definitively.

In the same sentence, the word precluded is used in the phrase "precluded the idea of risk." Several clues point to the meaning of this word. The first half of the paragraph tells us that the avenger thought a long time about revenge: "The thousand injuries of Fortunato I had borne as I best could... will not suppose, however, that I gave utterance to a threat." He not only thought about it a long time, but also he thought about it in secrecy. In the second half of the paragraph, the sentence "I must not only punish, but punish with impunity" tells us the avenger will not be caught himself and punished. Therefore, there is no risk involved, because the avenger's thinking and character precluded the idea of risk.

In addition, the intern and the teachers discussed literal, inferential, interpretative and creative levels of comprehension, and the intern gave suggestions as to the types of questions which would help develop these comprehension

skills. Questions such as, "Against whom did Montressor vow revenge?" and "How was Fortunato dressed when Montressor met him at the carnival?" require literal comprehension or simple recall. Inferential comprehension could be developed by asking, "Why did Montressor tell his servants not to leave the manor?" or "Why did Montressor appear to persuade Fortunato not to enter the catacombs?" Interpretative comprehension was required to answer such questions as, "What did Montressor really mean when he called himself a mason?" and "What was the significance of the motto 'Nobody provokes me without punishment'?" Questions such as, "Do you think Montressor was insane?" and "Do you have any reason to think Fortunato was doomed from the beginning?" demonstrate comprehension on the creative level.

Since it is generally accepted that next to English literature, mathematics is the major concern of schools, the intern decided to devote the second teacher-intern conference to some methods in teaching reading skills in that subject area. For his purpose, the intern selected a problem from Exploring Elementary Algebra and proceeded to discuss the ladder of steps, data diagrams and restating the problem approaches to teaching the following problem: "The sum of three numbers is 10. If you subtract the second number from

the first, the result is 30, and if you add the second and third, you get -8. What are the three numbers?" (p. 375)

Initially, the intern and teachers discussed the ladder of steps method as an aid to students in planning their attack on the problem. The intern suggested that teachers emphasize these steps until the students used them automatically:

Read the problem thoroughly, asking "What is this all about?" Check the meaning of any word you do not know.

Reread the problem, asking "What am I to find here?" (Three numbers which add up to 10.)

Ask yourself, "What facts are given?" (First number minus second equals 30; second number plus third equals -8).

Plan your attack. "What processes will I use?" (Addition and subtraction; equations $X + Y + Z = 30$, $X - Y = 30$, $Y + X = -8$).

Estimate the answer. "What would a reasonable answer be?" (Any reasonable combination such as 15 -3 -2 or -12 +8 +14 would be acceptable.)

Carry out the operations.

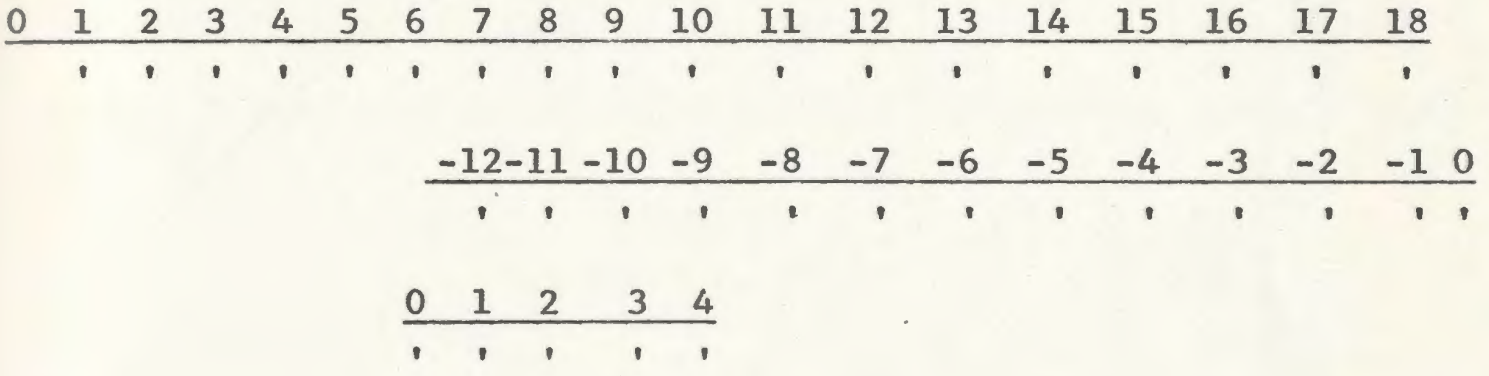
$X + Y + Z = 10$	$2X + Z = 40$	$18 - Y = 30$
$+X - Y = 30$	$-(X + 2 = 22)$	$-Y = 12$
$=(Y + Z = -8)$	$X = 18$	$Y = -12$

$$-12 + Z = -8$$

$$Z = 4$$

Check your work. See if your answer fulfills the conditions of the problem. (18 = (-12) + 4 = 10).

Following the discussion of the ladder of steps method, the intern then presented for discussion the data diagram approach to help students visualize a problem. The intern presented the following number line as one visual aid for the preceding problem:



The answer can be demonstrated simply by drawing three lines. The first line is marked off from 0 - 18. Directly under it another line is marked off from 0 - (-12). The third line directly under the second is marked off from 0 - 4. By subtracting the second line from the first, the student can see +6 remaining. Then by adding the third the student can see the total is ten. The teacher could easily use inches, or pennies or any other visual aid.

At the same conference, the intern also presented for discussion the restatement method to make a problem clearer. He suggested that teachers have their students restate a given problem in a variety of ways. By doing this, some students who do not understand the problem in its original form may find they understand it in its restated form. Listed below are two examples.

If you subtract the second and the first of three numbers you get thirty. If you add the second and the third of the same three numbers you get minus eight. If you add all three numbers you get ten. What are the three numbers?

What are the three numbers if you can add them and get the sum of ten, if you can subtract the second from the first and get thirty and if you can add the second and the third and get minus eight?

Analysis of Skills

Before the first conference ended, the intern gave each teacher a master list of the reading and study skills appropriate to each of the content areas (see Appendix B). He asked them to study this skills list and attempt to locate text material which would require each of the skills. He further encouraged the teachers to examine the list and

decide if it was complete from the point of view of their content areas. The intern felt that such a procedure would enable the teachers to become more familiar with the skills associated with their content areas.

As a follow-up to the initial conference, the intern met with the teachers in each content area. At those meetings, the writer and the teachers discussed the teachers' reactions to the master skills list. He asked the teachers to react to the completeness of the list and whether all skills were applicable to their content areas.

Even though all teachers thought that the skills list was comprehensive enough, some questioned the applicability of certain skills to their subjects. Mathematics and science teachers, for example, thought that reading orally was not really an essential skill to possess in these subjects. Mathematics teachers further thought that while using the library was important in the other content areas, these skills were not a necessity in mathematics, at least at the junior high school level. English teachers generally agreed that understanding dialect need not be given great emphasis. They considered it sufficient that students be aware that dialects do exist. In addition, while ability to evaluate the literary worth of materials is

a desirable skill for students to have, at the junior high school level it need not be given strong emphasis. In the same vein, social studies teachers thought that understanding degrees of probability was not an essential skill for students in this content area to possess with any large degree of proficiency.

All teachers agreed that vocabulary development, finding the main idea and reading for supporting details, in that order, were the skills that should receive heaviest emphasis in each of the subjects. Mathematics teachers, in addition, thought that problem solving was a skill which needed great emphasis while social studies teachers requested methods and activities to teach cause and effect relationships. Other more important skills in the teachers' view were the ability to locate information and to draw conclusions in all subjects, and the ability to organize materials in science and mathematics. All teachers also felt that knowing the general features of books was important information for students to have.

The results of these meetings were fruitful in that the teachers showed through the ideas they expressed that they had thought about the material. This gave the intern an insight into how well they understood the skills as

applied to their particular content areas.

Informal Group Inventories

The second point of emphasis at the teacher-intern conferences was the development, administration and interpretation of an informal group skills inventory for each of the subjects. The intern, who had previously developed an inventory for each subject area, met with the teachers of each subject and together they analyzed the inventory. The analysis included a discussion of the inventory in the light of the teachers' own needs and the applicability to their teaching of the skills tested.

English teachers were interested in determining their students' knowledge of vocabulary; therefore the intern included such items as general knowledge of word meaning, word recognition, syllabication and accent, and prefixes and suffixes. Mathematics teachers desired a greater emphasis on vocabulary understanding and on reading graphs and charts. Teachers noted that there was an overlap of skills tested in all the inventories namely vocabulary understanding and using parts of a book. (See Appendix A).

Administration and interpretation of the inventories were also discussed in depth. Teachers raised points

concerning the time limit for completion of each item, the standardization procedures involved and the overall time limit for the completion of the inventory in relation to the time available to them for a particular class. The inventory items were further discussed with regard to the significance that could be attached to students' success or failure in answering each item. Because the intern wished to encourage the teachers to construct their own inventories using the grade eight content materials, the sample skills inventories were based only on grade nine texts.

Of the ten teachers, three constructed and administered their own inventories, three used the intern's but the remaining four because of time limitations could do neither. Those who did administer the inventories were pleased, because they became aware that some of their students were lacking in the fundamental reading and study skills in their subjects. All teachers stated that they would in fact administer the inventories at the beginning of the next school year.

Teaching Techniques

At this point, the teachers were familiar with the reading and study skills related to their subject areas and had acquired the ability to construct, to administer and to

interpret their own reading skills inventories. The intern, therefore, felt that this was the appropriate time to introduce them to techniques for teaching the reading and study skills in six stages.

Suggestions for teaching major skills. The intern used a combination of lesson plans which he had devised and films which he obtained from Memorial University's Resources Centre to demonstrate some techniques that could be used in teaching the reading skills. The lessons were designed to develop the major skills in each of the content areas. Such skills as locating the main idea in literature and social studies, following a sequence of events in science, understanding technical vocabulary in mathematics and science, problem solving in mathematics and cause and effect relationships in social studies were some of the major skills stressed. Discussions to elicit teacher ideas and to determine alternative methods for teaching the skills followed each demonstration.

The intern explained the steps in the lesson and gave reasons why each step was important. For example, he pointed out that before any attempt is made to ask questions requiring the various levels and types of comprehension, it

is necessary to ensure that students understand the vocabulary in the material to be studied. A thorough critical analysis of the lesson then ensued. The intern encouraged teachers to criticize and to offer their views on the method used, the approach taken and the relative importance of the skill to the content area. In short, the intern and the teachers attempted to examine the lesson and to refine it in the light of the needs of the teachers.

Information and activity sheets. The intern distributed a number of information and activity sheets to the teachers, not only during demonstration lessons, but also throughout all phases of the internship program. Those resource materials consisted of sample lessons designed to teach outlining, note taking, cause and effect relationships, introducing and teaching the structure of a textbook, steps in problem solving and other related skills (see Appendix C). In addition, the intern compiled activities based on the content area materials the teachers were then teaching their students. The teachers and the intern closely scrutinized these materials with regard to their applicability in teaching the various subjects.

The intern encouraged the teachers to keep a file of

these activities and suggestions and to utilize them in their routine teaching experiences. The intern noted that many of the techniques were incorporated into the lessons he later observed. The science teacher, for example, made extensive use of Latin and Greek roots as well as contextual word clues in vocabulary development prior to teaching the content of the unit with which she was dealing. One of the social studies teachers planned a lesson to develop the students' skill in finding the main idea through locating the topic sentence when it comes at the beginning of the paragraph, in the middle of the paragraph or at the end of the paragraph and when it is not directly stated but implied. Another social studies teacher developed a lesson to teach cause and effect relationships in history, using the technique of matching a list of causes to a list of the effects of the causes. The intern observed a mathematics teacher utilizing the technique matching words with their meanings as a vocabulary review at the end of a unit. In addition, during a lesson on the novel, the writer observed an English teacher make a conscious effort to ask questions which required students to think on the literal, interpretative, inferential and critical levels.

Since vocabulary development is of major importance in all content areas, the intern decided that in the first inservice session he would demonstrate sample lessons and suggest learning activities for vocabulary development.

The intern also introduced and dealt with skills such as finding the main idea, reading for supporting details, problem solving, finding cause and effect relationships, drawing conclusions, locating information, organizing materials and knowing the general features of books. Because of the limited time available to both the intern and the teachers, it was necessary to concentrate on only the major skills associated with the various subjects.

Class demonstration lessons. Another technique implemented by the intern was to give class demonstration lessons in each of the four content areas, with the teacher concerned observing. Since the majority of the teachers taught two, and in two cases three different content area subjects, the intern felt it was unnecessary to duplicate such lessons as vocabulary development for each teacher in his different areas. As a rule, only the teacher concerned observed the intern teaching a particular lesson. On one occasion, however, three teachers, including the principal,

observed a demonstration lesson in science.

The intern met with each teacher and scheduled a time when he could give a demonstration lesson in that teacher's subject. He then developed a lesson plan designed to demonstrate a particular skill appropriate to the subject. Prior to teaching the lesson, the intern met with the teacher and reviewed the plan to ensure that the teacher understood exactly what was proposed.

The intern gave a demonstration lesson in literature designed to teach students to get meaning from context, using clues such as synonym or restatement, comparison and contrast.

The following is an example of a synonym or restatement clue: Flooded with spotlights - the focus of all attention - the newly chosen Miss Teen Age Canada began her year long reign. She was the cynosure of all eyes for the rest of the evening. The vocabulary word to be taught is cynosure.

Using this technique, the intern led the students to understand that spotlights points logically to someone or something, in this case to Miss Teen Age Canada who is the center of attraction, the focus of all attention. In the second sentence, the students' attention was drawn to the phrase "the cynosure of all eyes" and they were led to relate the

fact that being the cynosure of all eyes actually meant the same as "the focus of all attention" in sentence one. Thus, if one is the cynosure of all eyes for an evening, one is also the focus of all attention.

An example of comparison or contrast clue is: Bob excells in football, photography and music and his older brother is even more versatile. The vocabulary word to be taught is versatile.

In this sentence, the students' attention was drawn to the fact that Bob can play football, can do photography and is accomplished in music. Next, the students were asked to note the two words "even more" followed by the word "versatile" in the second clause. Bob can do several things exceptionally well but his brother is "even more versatile". The intern then elicited from students the idea that Bob's brother can do even more things than Bob can do.

The intern developed a demonstration lesson in mathematics to teach technical vocabulary using Latin and Greek roots.

In the following example, using Latin and Greek roots, the intern traced the origin of the word hexagon for the students: The word hexagon comes from the Latin word

hexagonum and the Greek word hexagonon with hex meaning six and gonia meaning corner or angle. Therefore, hexagon means having six corners or angles. In geometry, it means a plane figure of six sides and six angles.

In social studies, the intern taught a lesson in finding the main idea and a lesson in determining cause and effect relationships. One technique in finding the main idea was to have students read a paragraph and choose the best topic sentence from those provided. The following paragraph with possible topic sentences was the example used: Snow falls in some parts of Alaska when the temperature is fifty degrees below zero. In eastern Siberia, snow has fallen in temperatures of forty degrees below; in that part of Siberia that has recorded temperatures of ninety-four degrees below, snow has fallen.

(a) Is it ever too cold to snow?

(b) Siberia is the coldest place in the world.

(c) Cold weather makes it difficult to live in Siberia.

The intern used several techniques to teach cause and effect relationships. In one method, students were directed to read each effect and the pages on which the causes were found. They were then directed to choose the

appropriate cause from those discussed in the text. (Canada in One World, 1966).

1. Cause: (p. 183) _____

Effect: A world economic crisis

A variation of method two was to select the appropriate effect for the stated cause. For example:

Effects	Cause
(a) Soviet Union becomes industrialized	System of collective or co-operative farms in the Soviet Union.
(b) A shortage of workers	
(c) Peasant farms were liquidated.	

Especially important in science is the ability to follow directions and to note a sequence of events. Hence, the intern developed a lesson demonstrating those skills. Students were given an experiment explained in paragraph form and then given the steps of the experiment in scrambled form. The object was to have the students arrange the steps in the proper order. For example: To find the volume of an irregular object like a piece of stone, fill a graduated cylinder approximately half full with water and note the reading of the water level. Then put the object into the

water. Next, take a second reading of the water level. Note the difference between the first reading and the second reading (Exploring Science: Stage Two, 1971).

Arrange the following steps in order:

(a) Note the reading of the water level.

(b) Take a second reading of the water level.

(c) Fill a graduated cylinder approximately half full with water.

(d) Note the difference between the first reading and the second reading.

(e) Put the object into the water.

To establish the importance of following a definite sequence in an experiment, the intern asked several types of questions such as: Why could not step (d) be first? Why is it important to have two readings of the water level? Why does it make sense to have step (c) first? Thus, students were led to understand that it is necessary to follow a definite order of steps in a scientific experiment in order to insure results which would endure close scrutiny.

Following each of the lessons, the intern met with the respective teachers to discuss various aspects of the lessons they had observed. These discussions followed a format similar to that of the staff demonstrations. The

intern again encouraged the teachers to offer constructive criticism and to question the intern with respect to his selection of approaches. The writer and the teachers also discussed grouping on the skills level.

In a typical class, one might expect an informal skills inventory to reveal that a number of students are lacking in knowledge of textbook use, while another group might be having difficulty with prefixes and suffixes. Yet another group could be experiencing difficulty with determining word meaning from context. The teacher could divide those students into separate groups and develop activities which would help remedy these problems. The length of time students remained in such groups would, of course, depend upon the progress they made in mastering the skills. The number of groups would not necessarily correspond to the number of skill deficiencies. Obviously, if, for example, ten different groups were necessary to meet skill deficiencies, the teacher's task would be formidable. Therefore, he would have to place the greatest emphasis on those skills which he deemed of major importance.

In this way, both regular and remedial instruction could be made easier, more efficient and more effective. As one aspect of remedial instruction, the intern suggested

that the use of some of the activity sheets that he had distributed might be valuable.

Informal meetings. When necessary, informal meetings with individual teachers were held. Those meetings, in the main, were teacher initiated and dealt with special problems the teachers encountered with respect to skills instruction and student diagnosis. Questions (such as: What do you do in a case like this? What other activities could you suggest to teach this skill? and How might you suggest proceeding to solve this problem?) were posed and possible solutions to the problems discussed. It must be noted that not all teachers requested assistance, but some did seek help when they felt the need.

Teacher observation. Another approach that proved valuable was the intern's observation of teachers in the classroom. The intern scheduled a number of visits during which time he observed teachers present lessons. However, not all participated. The intern surmised that those teachers who did not participate felt that they were being intruded upon, thus the issue was not pursued further. Those teachers who were observed met individually with the intern after the

close of the session to discuss the lesson. During the discussion, the intern suggested refinements of the lesson and activities for teaching the skills. The intern also discussed many other ideas with the teachers including the appropriateness of the skills taught with respect to the demands of the materials, the grouping procedures employed and the activities utilized to reinforce the skills.

As a follow-up from the preceding approach, the intern had hoped to develop a system of inter-class visits whereby the intern and a teacher would observe another teacher of the same content area teaching a lesson. The rationale underlying this proposal was to enable teachers to obtain additional ideas for varying their approaches to teaching the reading and study skills related to their own content areas. Problems associated with scheduling combined with reticence on the part of the majority of participating teachers, however, prevented the implementation of this proposal. Several teachers felt insecure about being observed in the classroom while others felt that little or no worthwhile benefits would be derived from either observing other teachers or being observed themselves. Those teachers who wished to participate were prevented from doing so because their teaching schedules did not coincide with the proposed

observation periods.

Classroom and professional libraries. Throughout the program, the intern gave suggestions regarding the development of class libraries which were to consist of materials appealing to readers at varying reading levels. He compiled lists of books, indicating their reading levels, based upon materials obtained from the Curriculum Resources Center, Memorial University, and from various educational resource catalogues (see Appendix D). He distributed these book lists to the members of the staff and the administration who were encouraged to utilize the lists when ordering library materials for the following school year. These lists, as well as the previously mentioned skills grouping, were attempts to cater to individual differences within the classes. The intern also recommended other approaches, such as the use of newspapers and magazines, as well as class membership in book clubs, such as the Scholastic Book Club, that might be of some value.

The intern also suggested the development of a professional library consisting of materials pertaining to the teaching of the reading and study skills in the content areas. He compiled and distributed to the staff lists of

professional reading materials, including journals and periodicals, obtained from the Education Library, Memorial University (see Appendix D). Further, the intern encouraged the staff and the administration to apply for comprehensive membership in the International Reading Association. He hoped that some of these suggestions would be considered and that a serious attempt would be made to establish such a library, if not at the time of the internship, then at least at the beginning of the next school year.

Chapter 4

EVALUATION

The evaluation of this internship included informal feedback from the staff, the intern's personal observations and an eleven-item attitude scale.

During the internship, the writer had many opportunities to converse both formally and informally with the staff concerning the inservice training activities. Initially, as the intern expected, conversation centered on developing teachers' understanding of what was involved in the program. As their awareness of the purposes of the internship grew, the teachers expressed opinions as to the relative merits of the various activities involved. The major portion of this feedback was favourable. The majority of the teachers considered the program a worthwhile venture. Their comments indicated an enthusiam and interest for the benefits that could be derived for their students. Some teachers had begun to teach the reading and study skills in their content areas and were eager to discover additional techniques and activities to aid them. Several teachers, however, were

reluctant to express opinions and it was impossible to determine in this manner their views concerning the program.

The intern also observed the teachers teaching lessons in their respective content areas. He noted whether the ideas he had presented during the inservice training period were being implemented. He also noted such things as grouping procedures employed, student response to instruction and the effort made to teach reading and study skills appropriate to the content areas. The evidence indicated that most of the teachers were making a conscious effort to direct their lessons toward teaching the appropriate reading and study skills. The intern observed that the science teacher devoted a lesson to preteaching vocabulary, using Latin and Greek roots where applicable; the social studies teacher structured a lesson on teaching cause and effect relationships, using some of the activities the intern suggested and a literature teacher planned her questioning of a novel to develop literal, interpretative and creative thinking.

In addition, the intern developed an eleven-item attitude scale based on the Likert model. He designed the items to measure teacher attitude toward the various aspects of the internship activities. During the final week of the

program in a staff meeting, the intern gave each teacher a copy of the questionnaire and asked him to check the appropriate response to each item. (See Table 2.)

Table 2

Teacher Evaluation of Inservice
Training Program

Statements	Teacher Reaction				
	Agree Strongly	Agree	Undecided	Disagree	Disagree Strongly
1. Students should be taught the reading and study skills in their content areas.	7	3			
2. The ideas and activities presented during this internship were relevant to students' needs.	2	8			
3. The materials presented were relevant to you in teaching your content area.	2	7	1		
4. There were sufficient materials to give you a comprehensive view of what is involved in teaching the reading and study skills in your content area.	1	9			
5. The internship achieved the aims stated at the initial conference.	1	4	5		
6. The program was well organized.	2	5	3		

Table 2 (Continued)

Statements	Teacher Reaction				
	Agree Strongly	Agree	Undecided	Disagree	Disagree Strongly
7. The intern offered as much guidance as you would have liked.	2	7	1		
8. In the next school year, a conscious effort should be made to utilize the ideas presented during the internship.	7	3			
9. A similar program should be instituted in other junior high schools.	6	3	1		
10. I found that the information acquired regarding the teaching of reading and study skills helped me to teach my subject more effectively.	1	5	4		
11. From my point of view, the program, on the whole, was a success.	1	5	4		

N = 10

Table 2 shows the following results: Among the ten teachers involved, the range of "agree strongly" combined with "agree" was five on item five to ten on items one, two, four and eight; the range of "undecided" was five on item five to one on items three, seven and nine; there was no disagreement or strong disagreement with any of the items.

The intern feels there are two possible reasons for the indecision on item five. Either the teachers in question could not decide if in fact the intern had achieved his aims, or they could not remember the specific aims which he had stated eight weeks previously. Based on the positive results in other areas, the latter explanation would seem the more plausible of the two. It is interesting to note that of the five teachers who were undecided on item five, three were also undecided about item six. The results on items ten and eleven were identical; six teachers agreed and four were undecided. This indecision is attributed to the fact that some teachers decided to wait until the next school year to implement the ideas presented and, therefore, they could decide neither whether the information was going to be helpful, nor whether the program was a success. They felt that the true measure of success would come only after an effort was made to fully implement the ideas from the

beginning of the following school year.

The intern concluded that generally the teachers considered that the inservice training period was a valuable experience.

Chapter 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

The intern considered that high school students were not being taught the reading and study skills, partly because some of their teachers were not adequately prepared to teach these skills. After receiving permission from a local reading supervisor, he found a junior high school in which the teachers were willing to undergo a period of inservice education in the teaching of the reading and study skills in four major content areas. The program involved periodic teacher-intern conferences, classroom demonstration lessons given by the intern, the development of information and activity sheets by the intern and the compilation and distribution of professional reading materials by the intern. The program was implemented during the last eight weeks of the school year.

The program proved to be valuable to the teachers. They found, however, that because of the numerous duties associated with the end of the school year, they were unable to give a concentrated effort to the program. Both the intern and the teachers agreed that this type of program

would be of more benefit at the beginning of the school year.

Conclusions

As a result of this experience, the intern arrived at a number of conclusions concerning the implementation of such a program:

1. Testing is of central importance. Frequent and regular administration of informal group skills tests is necessary to determine where weaknesses occur. The information obtained from these tests should, in part, determine the direction the program needs to take.

2. The program needs to be flexible to meet individual needs. One approach to achieving this flexibility is the development and utilization of sound grouping procedures on the basis of achievement, ability and progress.

3. Regularly scheduled staff meetings need to be held. At such meetings, discussion should focus on student placement in the various groups and on student progress.

4. The program should undergo continuous evaluation. The results of informal testing, teacher observations and staff discussions need to be examined and the program changed to include new and useful ideas.

Recommendations

For a school considering the implementation of a reading and study skills program, the writer recommends the following:

1. The program should be begun as early as possible in the school year, preferably within the first month.

2. Students' existing reading and study skills ability should be ascertained immediately so that planning can be begun for developmental, corrective and remedial instruction.

3. A teacher who has a wide knowledge of reading or who is prepared to further his knowledge of it should be selected as the program coordinator.

4. Opportunities and encouragement should be provided for the program coordinator to attend various reading conferences and seminars.

5. The program coordinator should provide the staff with inservice education in the teaching of reading and study skills.

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APPENDIX A

CONTENT AREA READING SKILLS

READING SKILLS IN ENGLISH

LITERATURE

1. Comprehension

   (a) Finding the main idea of a paragraph

   (b) Picking out details

   (c) Recognizing time, place, analogies and cause-and-effect relationships

   (d) Recognizing sequence of plot, argument and character development

   (e) Recognizing patterns of organization: time, contrast, main idea, climax

   (f) Outlining material

   (g) Recalling author's pattern of organization

   (h) Predicting events

   (i) Recognizing mood

   (j) Visualizing

   (k) Interpreting figurative language

   (l) Distinguishing fact from opinion

   (m) Generalizing

   (n) Judging characters

2. Vocabulary
   (a) Using structural and phonic principles
   (b) Using context clues
   (c) Choosing appropriate word meaning
   (d) Using common prefixes, suffixes and roots
3. Locating Skills
   (a) Using the dictionary and glossary
   (b) Using the table of contents and index
   (c) Using the card catalogue
   (d) Finding and selecting reference materials
4. Speed
   (a) Adjusting speed to the type of material, purpose for reading and previous knowledge of the material
5. Oral Reading
   (a) Correct phrasing
   (b) Interpreting author's meaning to an audience
   (c) Using punctuation signals as a means of interpretation
6. Other Skills
   (a) Interpreting clues that reveal character
   (b) Inferring setting and anticipating events from clues

(c) Interpreting shades of meaning

(d) Following the development of plot, subplot and secondary details

(e) Recognizing theme

(f) Evaluating the literary worth of material

(g) Recognizing the literary characteristics of the short story, poem, play, essay and biography

READING SKILLS IN MATHEMATICS

1. Understanding the specialized vocabulary
2. Distinguishing between relevant and irrelevant facts
3. Visualizing the problem clearly
4. Relating phrases
5. Translating a work statement into computation
6. Following a sequence of operations

READING SKILLS IN SCIENCE

1. Changing the rate of reading according to purpose
2. Locating, selecting and using information from various sources
3. Learning and using the vocabulary appropriate to

the branch of science

4. Understanding and using scientific symbols and formulas
5. Using graphs, charts, maps, scales and diagrams to get information
6. Reading for main idea and supporting detail
7. Organizing material
8. Recognizing and following the sequence of steps in an experiment
9. Evaluating materials
10. Using the problem solving techniques
    (a) Formulating the hypothesis
    (b) Collecting the data
    (c) Organizing the data
    (d) Forming a conclusion
    (e) Testing the conclusion

READING SKILLS IN SOCIAL STUDIES

1. Making and using one's own questions to help remember ideas for a given purpose
2. Paraphrasing ideas without changing the meaning of the written material
3. Basing opinions on fact

4. Recognizing when there is insufficient information to answer a question
5. Recognizing conflicting viewpoints
6. Drawing conclusions
7. Justifying conclusions
8. Staying within the limits of information in reaching conclusions
9. Separating fact from opinion
10. Determining the reliability of statements
11. Cultivating a cautious but not suspicious attitude
12. Making simple comparisons and contrasts
13. Selecting material with respect to relevance
14. Sensing cause-and-effect relationships

APPENDIX B

GROUP READING INVENTORIES

ENGLISH GROUP READING INVENTORY

(Vanguard: Galaxy Series - Grade Nine)

The following group reading inventories are designed to be administered by the teacher who asks all questions and gives all directions orally. The students are to write the answers. Each inventory should be completed at one sitting which should last between forty-five and sixty minutes.

Parts of Book

1. On what page does the unit entitled "People and Problems" begin?

2. Where would you look in your book to find information about an author of a particular selection?

3. In what part of the book can you find the meaning of a word that you might not know?

Introduce Story

The teacher should first explore student background of experience related to the story "Clever Hans" (pp. 470-474), and then, to establish a purpose for reading the selection, devise questions such as the following:

a. Who is Hans?

b. What made him clever?

c. Do you think Mr. Von Osten tricked everybody?

Have students read the selection silently; note the time required for reading.

Vocabulary

4. What is meant by the word cues as it is used in the story (p. 471, column 1, line 13)?

Contextual Meaning

5. What is meant by the word eminent (p. 472, column 1, line 6)?

Synonyms and Antonyms

6. What word means the opposite of tenseness?

7. Use another word to describe Mr. Pfungst when he looked baffled.

General Knowledge of Meaning

8. Select the proper meaning of the word endowed.

a. provided

b. produced

c. provoked

d. propelled

9. Select the proper meaning of the word detect.

a. hide

b. respond

c. discover

d. decide

10. Select the proper meaning of the word repertoire.

a. copy

b. list

c. code

d. role

Syllabication and Accent

Divide the following words into syllables and show which syllable is accented:

11-12. unexplainable

13-14. imperceptible

15-16. design

18-18. questioner

Prefixes and Suffixes

19. What does the prefix im mean in imperceptible?

20. What is meant by pre in the word predetermined?

21. Change the noun arithmetic to an adjective.

22. Change the verb satisfy to a noun.

23. Change the adjective scientific to a noun.

24. Change the adjective mere to an adverb.

Identifying Main Ideas and Details

25. What happened when Hans was blindfolded?

26. How was Hans able to answer the questions?

27. Why was Mr. Pfungst able to solve the mystery of Hans' cleverness when all other attempts had failed?

28. What nationality was Mr. Von Osten?

29. What type of horse was Hans?

30. How long did it take Mr. Von Osten to train Hans?

Drawing Conclusions and Making Inferences

31. Do you think Hans was really capable of thinking like a human being? Why or why not?

32. Would Hans be able to answer a question you asked him? Why or why not?

33. What do the findings of Mr. Pfungst make you think about such feats as performed by Kreskin?

Skimming

Turn to the selection "House of Flying Objects" (pp. 463-469).

34. How much did the porcelain figurine in the living room cost?

SOCIAL STUDIES GROUP READING INVENTORY

(Canada: A New Geography - Grade Eight)

Parts of Book

1. On what page would you find the map that shows the Climatic Regions of Canada?

2. On what page does chapter eight begin?

3. Of what value are the problems and projects shown on page 273 to you for understanding the material in the textbook?

4. In what part of the book would you look to find the page reference for the topic dinosaurs?

Use of Resources

5. What library aid will tell you the library number of a book so that you would be able to find it on the shelves?

6. What is a biography?

7. Name one encyclopedia. How are the topics arranged in it?

Use of Graphic Aids

8. What does the map on page 169 show you?

9. What do the green triangles shown on the map on page 360 represent?

10. Turn to page 202. What three provinces have the largest populations in Canada?

11. Turn to page 213. Look at the picture at the top of the page. Why do those Eskimos use igloos during winter hunting trips?

Understanding Vocabulary

Read pages 420-423.

12. Define tariff.

13. What did the author mean by "automobiles dominate our way of life in Canada"?

14. What is a "trade preference"?

Noting Main Ideas

15. Why can the making of motor vehicles be regarded as one of Canada's leading secondary manufacturing industries?

16. Why did Canada import nearly all its automobile parts from the United States in the early 1960's?

17. Why was the development of the automobile industry in Canada so slow?

Noting Details

18. Approximately how many motor vehicles does Canada's automobile industry produce in a year?

19. Where was the first important automobile factory in Canada established?

20. Between World War 11 and the early 1960's, from which country was Canada importing most of the automobiles?

Drawing Conclusions

21. Is the automobile industry good or bad for Canada? Why?

22. What determines the location of an automobile factory?

23. Do you think the automobile industry will increase or decline in importance in the future? Why?

Recognizing Organization

24. Each author follows an outline in writing the information in your textbook. Write down the author's main topics in chapter eleven.

SCIENCE GROUP READING INVENTORY

(Exploring Science: Stage Three - Grade Nine)

Parts of Book

1. On what page will you find the chapter entitled "Supplying Our Cells"?

2. Of what value to you are the questions under the chapter section titled "Review Questions"?

3. What section of the book would you use to find the page reference for the topic "Flood Planes"?

Library

4. How are topics arranged in a reference book?

5. What is a biography?

6. Explain the difference between science fiction and science fact.

Vocabulary

7. Turn to page 434, section entitled "Radiation from Sparks", line 8. What is the meaning of the word radiate as used by the author?

8. What does the word oscillate mean?

9. Use the phrase magnetic field in a sentence.

10. When electric and magnetic fields together radiate from an antennae they are known as _____.

Read pages 434-437.

Identifying Main Ideas

11. When a rubber rod is rubbed with wool, sparks are produced. When this is done near a radio why does the radio crackle?

12. What causes an electric spark?

13. What was the reason given for energy loss in a condenser?

14. What was the most important result of the suggestion that energy might be radiated by combined electric and magnetic fields?

Identifying Pertinent Details

15. Why is the word waves confusing in the term electromagnetic waves?

16. Why must you not allow the switch on a dry cell to remain closed for a long period of time?

17. When making a simple oscillator, why are the file and wire taped where they are to be held?

18. How is a crude condenser formed?

Following Directions

19. What is the first step in setting up an

oscillating magnetic field?

20. How do you reverse the current in an oscillating magnetic field?

Drawing Conclusions

21. What happens when the charge on the two plates in a condenser is reversed?

22. What does an electric field have in common with a magnetic field?

23. Why are graphs used in studying electromagnetic waves?

Application

24. Name one result that came from the discovery and study of electromagnetic waves?

25. What would you have to do to a spring to make it oscillate?

26. Note the third diagram of the spreading fields of magnetism on the bottom of page 436. What common thing in nature does this remind you of?

Formulas, Symbols

27. What does the H refer to in the symbol H_2O?

28. Write, using symbols, forty degrees Fahrenheit.

MATHEMATICS GROUP READING INVENTORY

(Exploring Elementary Algebra - Grade Nine)

Restating Verbal Problems

Have students read problem 6, page 420, and answer the following questions:

1. Rewrite the above problem in your own words.
2. What are you asked to do with the numeral 5?
3. What are you asked to find?
4. Which basic mathematical operations must you use in solving this problem?

Adjusting One's Reading

Have students read problem 10, page 420, and answer the following questions:

5. Would you read problem 10 faster or slower than problem 6? Why?
6. Would you read a problem in mathematics differently from the way you would read a story? Why?
7. What steps would you use in reading any mathematical problem?

Translating Words to Symbols

8. Reread problem 6 carefully. Write the symbols

which stand for the following phrases in that problem:

a. multiplied by

b. increased by

c. is the same as

Knowing Symbol Meanings

9. What is meant by each of the following symbols?

a. $\div$

b. $<$

c. $>$

d. $\neq$

e. $\{\}$

f. $-$

Understanding Vocabulary

bigger

whole number

notation

factoring

centigrade

high

rod

real number

integer

solving for X

bushel

long

square root

formula

gallon

wide

proportion

10. Which of the above words represent ideas of quantity?

11. Which of the above words represent number processes?

12. Which of the above words represent kinds of measurement?

13. Define each of the following:

a. polynomial

b. coefficient

c. dividend

d. area

e. perimeter

Noting Relationships in Formulae and Equations

Read the following problem carefully:

The sum of three numbers is 10. If you subtract the second number from the first, the result is 30, and if you add the second and third, you get -8. (P. 375, No. 10.)

14. Write an equation to express the first relationship in the above problem.

15. Write an equation to express the second relationship in the above problem.

16. Write an equation to express the third relationship in the above problem.

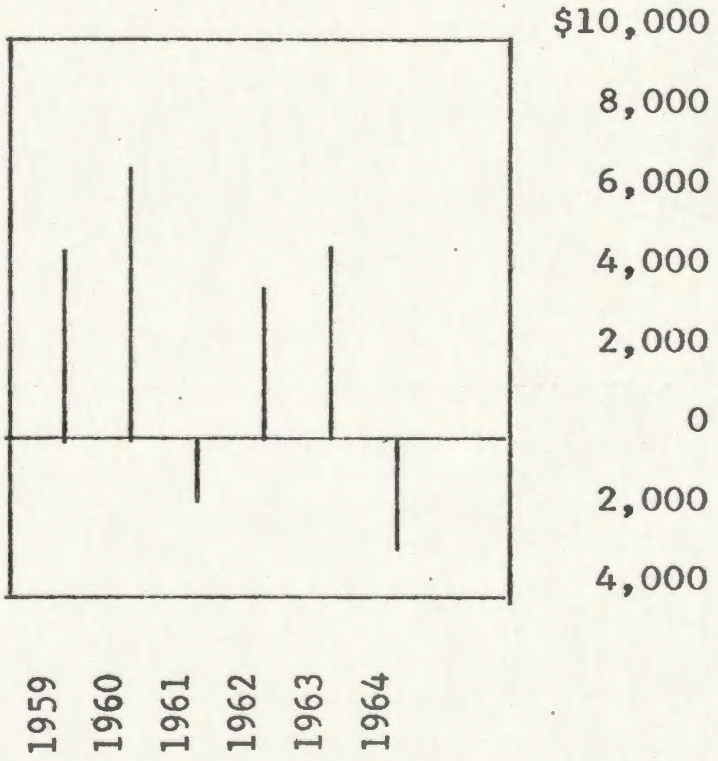
17. Write the following equation in your own words:

$$8 + 22 = 30$$

Obtaining Information from Charts, Tables and Graphs

18. Read problem 3, page 255, and draw a diagram to illustrate the problem.

19.



The above graph represents the net earnings of a company during the years 1959-64. Answer the following questions using this graph:

a. What was the difference in net earnings for the years 1963 and 1964?

b. What was the total loss in income for the years 1959 to 1964?

c. What were the average earnings for 1960 and 1963?

APPENDIX C

SKILLS DEVELOPMENT

VOCABULARY DEVELOPMENT

The following activities and suggestions for developing vocabulary, although based on individual content area materials, can be applied with little variation to any of the content areas.

English

1. Teaching word attack

   Before students are given a reading assignment, teachers can go through the selection and decide which words are most likely to cause difficulty. The teacher can then present these words in context and ask students to determine their meaning. Those words which most students have difficulty with can then be taught using the following approaches:

   (a) The teacher can first help students with the pronunciation of longer words by helping them to identify the root word marking off the syllables and

putting in the accent marks.

For example: in/ter/changé/a/ble.

(b) The teacher can help students determine meaning from context by teaching the various types of context clues such as:

(i) Direct explanation clue:

An ecologist, a scientist who specializes in the relationship between living things and their environment, is likely to have authoritative opinions on the problem of pollution versus man's survival.

(ii) Explanation through example:

In the course of man's evolutionary development, certain organs have atrophied. The appendix, for example, has wasted away from disuse.

(iii) Summary clue:

Peter Littlefield, our center,

stands six feet three in his stocking feet and weighs 210 pounds. His teammates call him "Runt", an obvious misnomer.

(iv) Familiar expression or language experience clue:
He took it upon himself - yes, he appropriated the entire responsibility for raising money for the class gift.

(v) Inference clue:
Sharon told her roommate, "I'm through with blind dates forever. This one topped all! What a dull evening! I was bored every minute. The conversation was absolutely vapid!"

2. Greek and Latin word parts

When teachers help students to become familiar with common Greek and Latin word parts and teach them to use these in combination with context clues, they are helping them to

acquire numbers of related English words and are teaching them a self-help technique through structural analysis. The following are some suggestions to teach Greek and Latin word parts:

(a) How many words can you get?

Have students write a word ancestor such as poly- on their paper. Then have them write as many words that begin with poly- as they can, for example, polygon, polynomial. Set a time limit and see which student can get the most words. They may consult a dictionary.

(b) Word coinages

After students have studied certain Greek and Latin word elements, the teacher or a student coins words by combining familiar parts. Other students can guess what they mean. For example:

magomarshmallowphile - a lover of big marshmallows.

(c) Vocabulary-building slip

Students can collect prefixes and roots and their derivatives on slips of paper or in a vocabulary notebook. For example:

Greek or Latin word part: omni

meaning: all

English derivatives	Meaning
Omniscient	All-knowing

(d) Words from mythology

The teacher can have students collect words which refer to Greek and Roman gods. For example: atlas, cereal, lunatic, oracle, hector, tantalize, mercurial and herculean.

4. Dictionary skills

(a) Selecting meaning

(b) Determining pronunciation

(c) Interpreting the information on derivatives

(d) Using the information about synonyms

5. Activities for Motivation and Enrichment

Teachers can use a variety of "word play" activities, particularly for less mature students, to intrigue and stimulate. Even with more mature students, a lighter approach may sometimes be desirable. Such activities offer opportunity for the reinforcement of vocabulary learnings.

(a) Mr. Webster Says

Five judges are appointed to a team from the members of the class. The remainder of the class is divided into two teams. The leader of team 1 announces a word. The leader of the second team must define the word and use it in a sentence which is acceptable. For example, the word <u>decrepit</u> may be defined as old and physically

broken down, as in the sentence "His model T runs but is very decrepit". The words could be collected from glossaries in the texts, reader, speller and so on. The judges decide whether the player on the second team scores a point. Each team has the same amount of time, or players from both teams can take turns.

(b) Prefixes

The prefix is announced, for example, auto. Each student gives a word beginning with it, as automobile, autocrat, automatic.

(c) Suffixes

A root word is announced, for example, electric. A student gives as many words as he can that are formed from the root word, for example, electrical, electrician, electrify. He scores a point for each word given. If

another student can add to the list, one point must be deducted from the original score for each word given by the other members of the class.

(d) Antonyms

Teams are formed of five or six members each. The teacher announces a word, such as relinquish, then uses it in a sentence. Each student on a team, in turn, gives words that are opposite in meaning, as retain, grasp, maintain, restrain. A point is scored for each member of the team that supplies an antonym. If a member of another team can supply additional ones, the two points for each word may be credited to his team.

(e) Synonyms

Conduct this activity in the same way as the one described under

Antonyms. The words accepted must mean about the same as the word announced.

(f) Crossword Puzzles

The teacher or several of the advanced pupils can construct puzzles for others to complete.

(g) Match-Ups

The teacher or a group of students can compile a list of new adjectives which may be used to describe personality traits of classmates, other students or staff members. Using their dictionaries, students match adjectives and people they know, then compare their descriptions with those of the other members of the class.

(h) Teachers can use a number of commercially marketed word games such as Password, What's the Good Word, Scrabble and Probe.

Social Studies

1. Encourage pupils to construct and use a personal file of new words which have been encountered. Using a file card and a dictionary, students should record the meaning of each new word as it is used within the context of the social studies topic, how it might be used in a sentence and a synonym for that word. For example:

Depression

Dictionary definition - a period marked by slackening of business activity, much unemployment, falling prices and wages

Sentence - Canada experienced a big depression in 1930 in which there was very little employment and people were poor.

Synonym - a time of no work, no employment, no money

2. The Divided Page

The teacher can have students set aside a section of their notebook as a glossary. As the students meet each new key term, they can collect it for

their glossary. Encourage them to keep this record up to date. Direct the students to draw a line down the middle of a page in their notebooks. In the "Key Term" column on the left, have them record the new word. In the "Meaning" column on the right, have them enter the meaning. For example:

Key Term	Meaning
Chapter 22	
1. depression (p. 184)	a period marked by slackening of business activity, much unemployment, falling prices and wages.
2. inequalities (p. 184)	lack of proper proportion; unequal distribution
	Test your understanding by covering this side

3. Multiple meanings

Students can be guided into discovering that a word can have multiple meanings. An activity such as the one below might be valuable. Words are listed with some of their meanings and students are directed to underline the correct meanings for each word.

Words	Possible meanings
i. foreign	a. known to us b. alien c. not of our nationality d. doesn't belong in the group
ii. depression	a. a time when most people are poor b. a time when there is plenty of money for most c. a hollow in the ground d. a time when one is sad

4. Word analysis and meaning

Direct students to follow these directions:

(a) Give the two syllable word which means tax on imported and exported

goods

T _ _ / _ _ _ _

(b) Give the three syllable word which means money

C _ _ / _ _ _ / _ _

5. Help pupils to correlate the new words or terms with a current event to show their importance to the particular age group.
6. Hold daily discussion of words and terms giving special attention to word roots and to shades of meanings. After such study, relate the words or terms to the assignment.
7. Direct students to underline new words in the text and write the meanings at the bottom of the page.
8. Encourage pupils to use difficult words in sentences of their own.

Science and Mathematics

1. Categorizing

Direct students to place the words

below in one or more of the three categories listed.

ellipses	planetoids	corona
umbra	eccentric	mass
apogee	epicycles	perihelion

Words pertaining to orbit	Words pertaining to eclipses	Objects in space

2. Matching exercise

Direct students to match the following words with the definitions below them.

perihelion planetoid
aphelion satellite

(a) _____ an object which travels in orbit around a planet

(b) _____ a minor planet

(c) _____ the point at which the earth is closest to the sun

(d) _____ the point at which the earth is farthest from the sun

3. Critical thinking

Direct students to note the rows of words. Have them circle the word in each row which they do not think is related to the other two. Tell them to be prepared to defend their choice.

arc	square	trapezoid
radius	chord	vertex

rectangle triangle rhombus

4. Word puzzle

   Direct students to read each definition and think of a word that fits it, has as many letters as there are blanks, and has the letter "i" in the correct position.

   (a) _ _ _ i _ _ _

   (b) _ _ i _ _ _ _ _

   (c) _ _ _ _ _ i _ _

   i. the path a planet follows in its orbit

   ii. perfectly circular orbits of the planets

   iii. point where earth is farthest from the sun

5. Develop crossword puzzles which involve the use of new concepts. Encourage the students to construct similar puzzles and to exchange them with others.

Discuss the meaning of new words that

will be appearing in a reading lesson.

7. Explain how to use context clues to get meaning and provide opportunities in using them.

8. Emphasize the use of the dictionary while pupils are reading science material and preparing reports.

9. Use new words in class discussion, explaining and discussing them.

10. Below are listed prefixes, suffixes and root words with their meanings. Have students use these word parts to assemble science words by placing each word part and its meaning in the correct column, and the meaning of the assembled word in its column. Some word parts may be used more than once.

PREFIXES	ROOTS	SUFFIXES
alti-, height	atom, small particle	-ize, to make
anti-, against	meter, measure	
	biotics, pertaining to life	

Prefix and Meaning	Root and Meaning	Suffix and Meaning	Assembled Word and Meaning
alti-, height	meter, measure		altimeter, to measure height

READING TO GET MAIN IDEA

This skill is basic to several comprehension skills, such as reading to generalize or to differentiate between fact and opinion. Below are the suggested steps in teaching the main idea.

1. Recognizing the main idea in a sentence

   Guide the students through discussion to determine the essential words of a sentence and still keep the idea. For example: I shall arrive at the International Airport in New York City at nine o'clock on Wednesday evening. The important meaning words in this sentence are "Arrive International Airport New York nine Wednesday evening". Students should be led to see that these words are in fact the main idea of that

sentence.

2. Recognizing the main idea in a paragraph when it is stated

The following procedure explains determining the main idea when it is stated in the first sentence. A similar procedure can be followed when the main idea is stated in the middle of a paragraph or at the end.

Direct students to read the following paragraph:

A school performs many services for the residents of a community. It offers instructional services for school age children during the day and, often, courses for adults in the evening. It provides a meeting place for community organizations. It also serves as an active cultural center, for plays, concerts, and lectures are often scheduled.

Next, direct the students to list the important ideas in the paragraph. For example: school performs many services,

offers instructional services, provides meeting place, cultural center.

Now lead students to determine that the first group of words in fact represents the overall idea of the paragraph. Hence the first sentence is the main idea of the paragraph.

3. Recognizing the main thought in a paragraph when it is not stated

Have students read a paragraph like the following:

We visited the seals frolicking in the water. Then we paid a visit to the colorful birds in the big new birdhouse. After that we stopped for a coke and hot dog. Before going home we spent a lot of time watching the funny monkeys.

Ask students to find the key ideas. Visited seals + visit to birds + coke and hot dog + before going home + watching monkeys = ? Here students will note that there is no stated overall idea. They must therefore make inferences. Students

must look at all the key ideas and determine the main idea of the paragraph themselves. In this easy paragraph, most students will agree that the key thought is "we visited the zoo" or something similar.

4. Application of the first three steps to content area textbooks

After the introductory work, tell students to look for the point the passage makes- the broadest, most significant message of the author. The following are suggestions for each of the content areas.

An example in English:

Read to find out why this selection has the title _____?

What is a good title for this paragraph?

Be sure your title is a good indication of what the paragraph contains and is broad enough to cover its content.

Write a telegram of ten words or less conveying the broadest, most significant

information in this selection (or paragraph).

An example in science:

Read the procedures you will follow in this laboratory experiment. Give the purpose of the experiment in a sentence or two.

An example in mathematics:

Direct students to read the problem thoroughly, asking "What is this all about?" Size up the problem situation. Read it again, if necessary, asking "What am I to find here?"

An example in social studies:

Read the section "The Canadians of 1901" to find the major reasons for political disunity in Canada in that year.

5. Use the title and paragraph or section headings as clues in discovering the chief thought:

   (a) Have the students make questions for each heading. By making such questions for studying the section,

the pupil has set up a purpose for his reading.

(b) Have the students invent their own titles for the material being read.

(c) Encourage students to write subject headings for reports and similar materials.

6. Choose from material that is being read by the students several paragraphs that contain good key sentences. Write the key sentences on the blackboard. Have the students find the paragraph from which each was taken.

7. Provide a series of paragraphs with several possible headings for each, one of which is correct, one too inclusive, and one or two misleading or containing misstated facts. Have the students select the correct heading and give their reasons for their choice.

8. Provide students with a copy of a three-paragraph nonfiction selection. List four sentences below the selection, one of which represents the main idea.

Ask them to choose the main idea and to tell why the other sentences are not appropriate.

READING FOR SUPPORTING DETAILS

After the students have developed sufficient skill in determining the main ideas they will recognize for themselves the need for skill in reading for details, for without details the general ideas will lack depth and the degree of meaning needed to master the subject matter. The following are some suggestions which can be applied to all subject areas:

1. Give specific questions that students can answer after reading.
2. Have students determine the topic sentence of a paragraph and then find evidence to support the idea expressed.
3. Have students jot down important details as they read and then rank them in importance according to criteria agreed upon by the class.
4. Assign students to write topic sentences with supporting details, then construct

paragraphs.

5. Guide the students to see that the author provides clues to the details in a selection through the use of ordinal numbers, cardinal numbers and signal words such as therefore, because, but, however, besides, as a result, generally. The following are some activities for specific content areas:

6. An example in English literature:
   What details create a mood of melancholy in the opening paragraphs of "The Fall of the House of Usher?"
   Which character did you like or dislike in the story? What has the author done or had the character do to make you like or dislike him?
   Illustrate this scene from the story.

7. An example in social studies:
   Read this account of the life of Sir Wilfred Laurier. Notice how new

paragraphs introduce new events in his life or important aspects of it. Make brief notes (just a word or two) that give the gist of the event, or jot a word or two in the margin.

8. An example in science:

   What conditions are probably necessary for a tornado to form?

   What are catalysts? What are their unusual properties?

   Can you find in this passage evidence that supports the author's statement that some present-day land areas were once covered by the ocean?

9. An example in mathematics:

   What are you to find in this problem? What facts are given? What information are you already given in the problem?

READING TO INTERPRET VERBAL PROBLEMS IN MATHEMATICS

1. The teacher must guide the student to understand that in solving problems,

he must determine:

(a) what numbers and other facts are given

(b) what kinds of answers he is trying to derive

(c) what arithmetical procedure should be used

(d) the sequence of the steps to be employed for solving the problem

2. The value of slow careful reading of each problem should be emphasized. While reading, the students should be concerned with the basic parts of each sentence, including important words or word clues and facts and figures which are important ingredients in solving the problem.

3. Use different types of diagrams to illustrate the steps in the solution of a verbal problem. For example: How many nickels, dimes and quarters are there in $5.75 if there are twice as many dimes as nickels and two more quarters than dimes?

Kind	Number	Value
nickel	x	5x
dime	2x	10(2x)
quarter	2x + 2	25(2x + 2)

$$5x + 10(2x) + 25(2x + 2) = \$5.75$$
$$x = 7$$

4. Teach the student who has difficulty in interpreting mathematical terms to substitute synonyms that he can understand.
5. Provide supplementary verbal problems for the class by listing problems of varying levels of difficulty on separate sheets.
6. Give students a list of basic facts and figures to construct word problems in which the solution will require the use of an arithmetical procedure.
7. Lead students to think through the information in a problem to make a good guess as to the solution. More important still, guide students to test their guesses with the data given.
8. Try holding sessions in which one concentrates on guiding students through

the reading of verbal problems - through the stage of formulating the open sentence but no further. Guide them through a sequence: reading for the drift of the problem - asking, "What am I to find?" - noting what is given - making a "data diagram" - planning their strategy, and so on. In these practice sessions, have them concentrate only on reading and thinking through the information. They need not spend time performing the computations.

9. Write out the statement in the problem across the chalkboard in one long line. Then show, just below, how the verbal statement can be written in a mathematical statement by substituting the right mathematical symbols for the words. This "translation device" is often effective.

INTERPRETING MEANING

1. Have students read the introductory

paragraph of a chapter or section of a chapter and ask them to predict the probable organization of the chapter.

2. Present students with a conclusion drawn from the assignment and ask them to find justifications. After practice in this way, a false generalization may be presented and students asked to evaluate it in terms of information given in the chapter of the text.
3. Present students with a paragraph and several conclusions and ask them to determine which conclusions appear justified.
4. Offer students a number of paragraphs out of sequence and ask them to place them in proper order.
5. Give students a paragraph, and offer them a series of statements. Ask them to indicate which statements are consistent with the information provided in the paragraph.
6. Offer students an incomplete series of

logical steps and ask them to supply the missing part.

7. Draw students into expressing an opinion based on material read; then ask them to defend their opinion by showing how the material read is related to it.

QUESTIONS AND ACTIVITIES DESIGNED TO DEVELOP THE ABILITY TO DRAW CONCLUSIONS

1. Questions such as "On the basis of the evidence, what conclusions can you draw?"
2. Is the author's conclusion sound, based on the evidence he gives and in the light of current knowledge?
3. Offer students a list of facts and a number of possible conclusions. Have them select the best conclusions and be prepared to give reasons for their choice.
4. Encourage students to give opinions and to explain how they arrived at such conclusions.
5. Ask pupils to identify the kind of person to whom certain advertisements are

probably directed:

(a) a man with a tatooed arm smoking a cigarette

(b) a beautiful girl reclining on top of a sports car

(c) a picture of the Rock of Gibraltar in an advertisement

ACTIVITIES TO TEACH LOCATING SKILLS

Sources of information

Indexes
Tables of contents
Glossaries
Card Catalogues
General references
Newspapers, magazines, pamphlets
tables, maps, graphs, charts
Dictionaries

Activities

1. Discuss where to find each of these sources - indexes, tables of contents, glossaries, card catalogues - and the information that each gives.
2. Assign each student one of the above items to report on.
3. Discuss general references, newspapers, magazines and pamphlets and show which are most likely to be used, the information

they contain and where they can be found.

4. Give speaking and writing assignments requiring the use of the various sources of information.
5. Discuss the reliability of references such as newspapers.
6. Discuss the reliability of general references in terms of copyright date, author's qualifications and the like.
7. Have students prepare graphs, tables or charts to present facts in a report to the class.

APPENDIX D

PRINTED LIBRARY MATERIALS

ENGLISH

SUPPLEMENTARY BOOKS FOR INDEPENDENT READING

Har-Nal Distributors Ltd.
100 Steelcase Road E.
Markham, Ontario

Author	Title	Reading Level
Anderson, R.	Beyond the Beyond	7-10
Anderson, R.	The Day of Their Return	7-10
Asimov, I.	David Star Space Ranger	5-10
Boulle, P.	Garden on the Moon	7-10
Brown, J.D.	Stars in my Crown	10
Burton, R.	Poems: An Anthology	9
Campanella, R.	It's Good to be Alive	9
Chapman, A.	Black Voices	9
Chute, M.	Stories From Shakespeare	7-10
Clarke, A.C.	A Fall of Moondust	7-10
Clarke, A.C.	Islands in the Sky	7-10
Cooper, J.F.	The Deerslayer	7-10
Cooper, J.F.	The Last of the Mohicans	7-10
Crane, S.	The Red Badge of Courage	7-10
Davies, L.P.	The Paper Dolls	10
Duncan, L.	Down a Dark Hall	6-9
Fenton, E.	Ann of the Thousand Days	7-10
Graham, L.	South Town	6-9
Gunn, J.	The Listeners	7-10
Harte, B.	The Outcasts of Poker Flat	8-11
Hunter, D.	Sasquatch	9
Hurwood, B.J.	Passport to the Supernatural	9
Kahn, D.	The Code Breakers	7-10
Markham, F.	Napoleon	10
Neufeld, J.	Lisa Bright and Dark	7-10
Neufeld, J.	Edgar Allan	5-9
Neufeld, J.	Twink	7-10
Orwell, G.	Animal Farm	7-10
Portis, C.	True Grit	8-11
Pratt, T.	The Barefoot Mailman	7-10
Samuels, G.	Run, Shelley, Run	7-10

Author	Title	Reading Level
Scott, W.	Ivanhoe	7-10
Stevenson, R.L.	Kidnapped	6-12
Swift, J.	Gulliver's Travels	9
Twain, M.	Huckleberry Finn	7-10
van Tuyl, B.	Sunbonnet: Filly of the Year	5-9
van Tuyl, B.	Bonnie and the Haunted Farm	5-9
Whitney, P.A.	The Fire and the Gold	7-10
Wood, P.A.	I've Missed a Sunset or Three	6-10
York, C.B.	Nothing Ever Happens Here	6-10

Scott, Foresman and Company
433 E. Erie Street
Chicago, Illinois 60611 (High-Interest Low-Vocabulary)

Blackmore, R.D.	Lorna Doone	4-6
Defoe, D.	Robinson Crusoe	4-6
Dickens, C.	The Prince and the Pauper	3
Melville, H.	Moby Dick	4-6
Stevenson, R.L.	Treasure Island	4-6
Twain, M.	Tom Sawyer	4-6
Verne, J.	Around the World in Eighty Days	4-6

Webster Publishing Division
McGraw-Hill, Inc.
Manchester, Missouri 63011 (High-Interest Low-Vocabulary)

Dickens, C.	Tale of Two Cities	3
Doyle, A.C.	Cases of Sherlock Holmes	3
Dumas, A.	Count of Monte Cristo	3
Kottmeyer, W.A.	Greek and Roman Myths	3
Kottmeyer, W.A.	Simon Bolivar	3
London, J.	Call of the Wild	3
Malory, T.	King Arthur and His Knights	3
Scott, W.	Ivanhoe	3
Wallace, L.	Ben Hur	3

Author	Title	Reading Level
Airmont Publishing Co. Inc. **22 East 60th. Street** **New York, New York**		
Hawthorne, N.	House of Seven Gables	9
London, J.	White Fang	6
Wyss, J.D.	The Swiss Family Robinson	5
Holt, Rinehart & Winston Co. of Canada Ltd. **833 Oxford Street** **Toronto, Ontario**		
Blackburn, P.	Cities	7-9
Brooks, C.K.	I've Got a Name	7-9
Brooks, C.K.	Search for America	7-9
Guerra, V.	Turning Point	7-9
Monig, C.	The Acid Nightmare	7-9
More, D.	Sight Lines	7-9
Sharpe, D.	Nobody But Yourself	7-9
Stull, E.	Larger Than Life	7-9
Trout, L.	Conflict	7-9
Trout, L.	At Your Own Risk	7-9
Trout, L.	I (Me)	7-9
Trout, L.	Unknown Worlds	7-9
Vance, E.	Escape	7-9
Pyramid Publications **444 Madison Avenue** **New York**		
Bailk, E.	Marty Goes to Hollywood	7-12
Braithwaite, E.R.	To Sir With Love	7-12
Erdman, L.G.	The Separate Star	7-12
Reasons, G.	They Had a Dream	7-12
Wilkerson, D.	The Cross and the Switchblade	7-12

Author	Title	Reading Level
Avon Books 959 Eighth Avenue New York		
Behn, H.	The Faraway Lurs	7-12
Rose, K.	There is a Season	7-9
Tunis, J.R.	His Enemy, His Friend	7-10
Fitzhenry and Whiteside Limited 150 Lesmill Road Don Mills, Ontario		
Ball, J.	In the Heat of the Night	7-10
Bradbury, R.	Fahrenheit 451	7-10
Parks, G.	The Learning Tree	7-10
Shute, N.	On the Beach	7-10
Pocket Books 630 Fifth Avenue New York		
Blanton, C.	Hold Fast to Your Dreams	5-8
Butler, B.	Light a Single Candle	7-9
Edwards, A.	Haunted Summer	6-9
Bantam Books, Inc. 271 Madison Avenue New York		
Gibson, W.	The Miracle Worker	6-12
Picard, S.	The Man Who Never Was	6-12
Poe, E.A.	Great Tales of Horror	7
Wibberley, L.	The Mouse that Roared	6-12

Author	Title	Reading Level
Dell Publishing Co. Inc. 750 Third Avenue New York		
Campbell, H.	Why Not Join the Giraffes	5-8
Jones, J.	Pistol	7-8

SCIENCE

MULTI-LEVEL READING LIST

Griffin House
Griffin Press Limited
455 King Street West
Toronto, Ontario (High-Interest Low-Vocabulary)

Author	Title	Reading Level
Amos, W.H.	The Life of the Seashore	6-8
Asimov, I.	ABC's of Space	3-6
Asimov, I.	Galaxies	3-5
Asimov, I.	Mars	3-5
Asimov, I.	The Moon	2-4
Asimov, I.	Stars	3-6
Aylesworth, T.G.	This Vital Air, This Vital Water: Man's Environmental Crisis	6-8
Barr, G.	Fun and Tricks For Young Scientists	4-8
Billington, E.	Understanding Ecology	5-8
Bibby, C.	Your Body and How it Works	6-8
Black, P.	Busy Winds	2-4
Blackwood, P.E.	Push and Pull: The Story of Energy	6-8
Bowman, J.C.	On Guard: Living Things Defend Themselves	4-7
Branley, F.M.	A Book of Venus For You	2-5
Branley, F.M.	Gravity is a Mystery	2-4
Branley, F.M.	Man In Space to the Moon	4-7

Author	Title	Reading Level
Cooper, M.	Gift From the Sun: The Mastering of Energy	6-8
Davies, J.C.	Fresh Water: The Precious Resource	6-8
Dolezal, E.	Conquest of Space	6-8
Edson, L.	Worlds Around the Sun	6-8
Edlin, H.L.	Plants and Man: The Story of Our Basic Food	6-8
Eeckhoudt, J.P.	A Butterfly is Born	4-8
Farady, N.	A Chemical History of a Candle	6-8
Fenton, C.L.	The Fossil Book: A Record of Prehistoric Life	7-8
Freedman, A.M.	Animal Instincts	6-8
Feravolo, R.	Easy Physics Projects: Air, Water and Heat	4-7
Freeman, M.	When Air Moves	4-6
Freeman, M.	The Look-It-Up Book of Space	5-8
Gallant, R.A.	Exploring Mars	4-8
Haggerty, J.J.	Apollo: Lunar Landing	5-8
Halacy, D.S.	Charles Babbage: Father of the Computer	6-8
Heady, E.O.	Coat of the Earth: The Story of Grass	6-8
Henry, B.	Air	6-8
Hyde, M.O.	Exploring Earth and Space	4-7
Kerman, S.D.	Color Television and How it Works	7-8
Kohn, B.	The Scientific Method	4-7
Kramer, J.	Gardens Under Glass: The Miniature Greenhouse in Bottle, Bowl or Dish	6-8
Lauber, P.	The Planets	5-8
Ley, W.	Inside the Orbit of the Earth	7-8
Liss, H.	UFO's	5-8
McCarthy, A.	Giant Animals of Long Ago	4-7
McCormick, O.	The Life of the Forest	6-8
Matthews, W.H.	Wonders of the Dinosaur World	4-6

Author	Title	Reading Level
Michel, J.	Small Motors You Can Make	4-8
Niering, W.A.	The Life of the Marsh: The North American Wetlands	6-8
Pearl, R.M.	Wonders of Gems	4-6
Pearl, R.M.	Wonders of Rocks and Minerals	4-6
Pough, F.H.	A Field Guide to Rocks and Minerals	4-8
Pough, F.H.	The Story of Gems and Semi-precious Stones	5-8
Pringle, C.	The Only Earth We Have	6-8
Richey, B.J.	Apollo Astronauts: First Men on the Moon	5-8
Selsam, M.	How Animals Tell Time	3-6
Shuttlesworth, D.	Clean Air - Sparkling Water	6-8
Simon, S.	Weather and Climate	4-7
Slote, A.	The Moon in Fact and Fantasy	5-8
Sootin, H.	Experiments With Electric Currents	5-8
Stepp, J.	Setting Up A Science Project	4-8
Stone, G.K.	Science Project Puzzlers: Starter Ideas for the Curious	6-8
Verral, C.	Go! The Story of Outer Space	4-7
Waters, J.F.	What Does an Oceanographer Do?	4-8
Weiss, H.	Motors and Engines	4-8
Winchester, J.H.	Hurricanes, Storms, Tornadoes	5-8
Zim, H.	Waves	3-5

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Author	Title	Reading Level
Asimov, I.	The Chemicals of Life	10
Asimov, I.	The Genetic Code	10
Bova, B.	The Quest of Quasars	7-10
Bova, B.	The New Astronomies	9-11
Bova, B.	The Fourth State of Matter	9-11
Carson, R.	The Age of the Sea	10
Clarke, A.C.	Report on Planet Three	9-11
Lorenyz, K.	King Solomon's Ring	7-10
Matthiessen, P.	Blue Meridian	9
Pearl, R.M.	How to Know the Minerals and Rocks	7-10
Peterson, R.T.	How to Know the Birds	7-10
Seton, E.T.	Lives of the Hunted	7-10
Storer, J.H.	The Web of Life	8-11
Sullivan, W.	We are not Alone	11

Books of Canada Ltd.
888 Dupont Street
Toronto, Ontario

Cox, B.	Prehistoric Animals	6-10
Dance, P.S.	Sea Shells	9-11
Forsdyke, A.G.	Weather and Weather Forecasting	8-10
Gamow, G.	One, Two, Three .... Infinity	9-12
Money, S.	The Animal Kingdom	7-10
Nicolson, L.	Exploring the Planets	6-10
Remington, J.E.	Insects of the World	9
Saunders, D.	Sea Birds	8-10
Stidivorthy, J.	Snakes of the World	5-9
Thomas, A.	On the Shore of Endless Worlds	9
Tribe, I.	The Plant Kingdom	7-10
Worcester, R.	Electronics	8-10

SOCIAL STUDIES

MULTI-LEVEL READING LIST

Griffin House
Griffin Press Limited
455 King Street West
Toronto, Ontario

Author	Title	Reading Level
Baldwin, C.	How Indians Really Lived	5-8
Bowsfield, H.	Laurier	6-8
Bjorklund, O.	The Indians of North-eastern America	5-8
Bleeker, S.	The Eskimo	5-8
Burland, C.	North American Indian Mythology	6-8
Carse, R.	The Great Lakes Story	5-8
Clark, E.	Cherokee Chief: The Life of John Ross	6-8
Cowan, H.	Canada's Governors General	7-8
Davis, E.M.	Canada's Oil Industry	6-8
Dykes, J.G.	Canada's Automotive Industry	6-8
Fells, M.E.	Geography for Canadians	
	Book 1	5-8
	Book 2	5-8
	Book 3	5-8
	Book 4	5-8
Fisher, O.M.	First Geography of Canada	5-8
Guillet, E.C.	Early Life in Upper Canada	REF
Hardy, W.G.	Alberta	7-8
Haworth, E.	Imprint of a Nation	6-8
Hayes, J.F.	The Nation Builders	6-8
Howard, R.	Canada Votes, 1791-1891	6-8
Howard, R.	Confederation	6-8
Humphries, C.	The Great Depression	6-8
Hutchinson, B.	Macdonald to Pearson	7-8
Judson, C.	The St. Lawrence Seaway	5-6
Kidd, K.E.	Canadians of Long Ago	5-8
Leechman, D.	Native Tribes of Canada	5-8
Lindsay, S.	This is Canada	6-8
Linneweaver, C.	The First Book of Canada	4-7

Author	Title	Reading Level
Lower, R.M.	Colony to Nation	REF
Manchester, L.	Canada's Fisheries	6-8
Mason, F.V.	The Battle for Quebec	6-8
Mason, F.V.	The Battle of Lake Erie	6-8
McCourt, E.	Revolt in the West	5-7
McNeer, M.	The Canadian Story	5-8
Monture, E.B.	Famous Indians	6-8
Moore, B.	Canada	6-8
Morenus, R.	The Hudson's Bay Company	4-6
Nathan, A.G.	The First Transatlantic Cable	4-6
Ondaatje, C.	The Prime Ministers of Canada, 1867-1967	5-8
Phillips, R.A.J.	Canada's Railways	5-8
Rogers, E.S.	Indians of Canada	6-8
Ross, F.	The Land and People of Canada	6-8
Stanley, G.F.	The Story of Canada's Flag	5-8
Stevenson, O.J.	The Talking Wire	5-8
Stuebing, D.	Building the CPR	6-8
Stuebing, D.	Dieppe 1942	6-8
Symington, D.F.	The Canadian Indian	7-8
Toppings, E.	Canada	5-8
Walker, D.	Canada's Agriculture	6-8
Ward, N.	Government in Canada	REF
Watts, A.	Instant Weather Forecasting in Canada	4-8
White, A.T.	The St. Lawrence Seaway of North America	4-6
Wibberley, L.	The Complete Life of Winston Churchill	6-8

APPENDIX E

PROFESSIONAL DEVELOPMENT

RESOURCES

Books

Artley, A. Sterl. Trends and Practices in Secondary Reading. Newark, Delaware: International Reading Association, 1968.

Aukerman, Robert C. Reading in the Secondary School Classroom. New York: McGraw-Hill, 1972.

Bamman, Henry A., Ursula Hogan and Charles E. Greene. Reading Instruction in the Secondary Schools. New York: David McKay, 1961.

Dawson, Mildred A. Developing High School Reading Programs. Newark, Delaware: International Reading Association, 1957.

Dechant, Emerald. Reading Improvement in the Secondary School. Englewood Cliffs: Prentice-Hall, 1973.

Devine, Thomas G. and Howard M. Evans. Reading in the Secondary Schools. Dubuque: Kendall/Hunt, 1971.

Duggins, James, ed. Teaching Reading for Human Values in High School. Columbus: Merrill, 1972.

Elkins, Deborah. Reading Improvement in the Junior High School. New York: Teachers College Press, Columbia University, 1963.

Fader, Daniel N. and Elton B. McNeil. Hooked on Books. Oxford: Pergamon Press, 1966.

Gerrard, Margaret G. and John A. McInnes. Improving Your Teaching of Reading Skills. Don Mills, Ontario: Thomas Nelson and Sons (Canada) Ltd., 1960.

Hafner, Lawrence E., Improving Reading in Secondary Schools: Selected Readings. New York: The MacMillan Company, 1967.

Herber, Harold L. Teaching Reading in Content Areas. Englewood Cliffs: Prentice-Hall, 1970.

Herber, Harold L., ed. Developing Study Skills in Secondary Schools. Newark, Delaware: International Reading Association, 1965.

Karlin, Robert. Teaching Reading in High School. 2nd edition. Indianapolis: Bobbs-Merrill, 1972.

Karlin, Robert, Margaret J. Early and Gwen Horsman. Reading Instruction in Secondary Schools. Newark, Delaware: International Reading Association, 1969.

Massey, Will J. and Virginia D. Moore. Helping High School Students to Read Better. New York: Holt, Rinehart and Winston, Inc., 1966.

Marksheffel, Ned D. Better Reading in the Secondary School. New York: Ronald Press, 1966.

Olson, Arthur V. and Wilbur S. Ames, eds. Teaching Reading in Secondary Schools: Readings. Scranton, Pennsylvania: International Textbook Company, 1970.

Robinson, Alan H. and Sidney J. Rauch, eds. Corrective Reading in the High School Classroom. Newark, Delaware: International Reading Association, 1966.

Robinson, H. Alan and Ellen Lamar Thomas. Fusing Reading Skills and Content. Newark, Delaware: International Reading Association, 1969.

Shepherd, David L. Comprehensive High School Reading Methods. Columbus, Ohio: Merrill, 1973.

Shick, George B. and Bernard Schmidt. A Guidebook for the Teaching of Reading. Chicago: Psychotechnics Press, 1966.

Stewart, L. Jane, Frieda M. Heller, and Elsie J. Aberty. Improving Reading in the Junior High School. New York: Appleton-Century-Crofts, 1957.

Strang, Ruth and Florence C. Rose. Problems in the Improvement of Reading in High School and College. Lancaster, Pennsylvania: The Science Press Printing Company, 1940.

Strang, Ruth and Dorothy Kendall Bracken. Making Better Readers. Boston: Heath, 1957.

Thomas, Ellen Lamar and H. Alan Robinson. Improving Reading in Every Class: A Source Book for Teachers. Boston: Allyn and Bacon, 1972.

Viox, Ruth G., Evaluating Reading and Study Skills in the Secondary Classroom. Newark, Delaware: International Reading Association, 1968.

Weiss, M. Jerry. Reading in the Secondary Schools. New York: The Odyssey Press, Inc., 1961.

Wood, Evelyn N. and Marjorie Wescott Barrows. Reading Skills. New York: Holt, Rinehart and Winston, Inc., 1958.

Periodicals

Reading Research Quarterly, International Reading Association, Newark, Delaware.

Reading Newsreport, 11 West 42nd Street, New York, New York 10036.

Reading Improvement, University of Wisconsin, Milwaukee, Wisconsin 532001.

Reading Horizons, Carter Reading Council of the International Reading Association, Kalamazoo, Michigan.

Reading World, The College Reading Association, Box 356, Shippensburg, Pennsylvania 17257.

The Reading Teacher, International Reading Association, Newark, Delaware.

Ohio Reading Teacher, Ohio Council of the International Reading Association, Bowling Green, Ohio 43403.

Journal of Reading, International Reading Association, Newark, Delaware.

Journal of Reading Behavior, National Reading Conference, Milwaukee, Wisconsin.